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How do I contribute to student teachers' critical development?

A higher education practitioner's personal account of a move towards a more critical and emancipatory pedagogy through design and technology

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Abstract

In this paper I explain how I have generated a living educational theory of practice, as a practitioner reflecting on action (Schön, 1995). I describe a self study action research project which I undertook to improve my practice, as a senior lecturer in initial teacher education. I explain how I have learnt to improve my capacity for critical consciousness as well as contribute to the capacity of those in whose learning I may have an educational influence. Through carrying out the research, I show how my values concerning emancipation, social justice and respect for the environment are realised more fully in my practice and how I use these values as living standards of judgement to test and validate my claim to knowledge. My claim is that I have contributed to improvement of students' knowledge, understanding, awareness and critical consciousness of some aspects of global citizenship through my specialist subject, primary design and technology.

Keywords: Living Educational Theory; Design and Technology; Global Citizenship; Sustainability; Critical Consciousness; Emancipation.

My personal and professional context

My current professional role is as a Senior Lecturer at St. Mary's University College in London, UK where I am responsible for facilitating teaching and learning of undergraduate and postgraduate students training to be primary school teachers. I am strongly influenced by deeply held values such as respect, inclusion, social justice and emancipation.

I believe my experiences of education as a pupil, and later as a teacher, have contributed to the formation of these values as well as my philosophy of education and professional identity. My formal schooling took place in a socially diverse area of North London in the 1960s and 1970s. In general, my experience of schooling was commensurable with my identified ontological values such as inclusion, equality, justice and diversity. The ethos of my secondary school strengthened my belief that I could make a positive contribution to society. During the year between school and University, my concern for social justice underpinned my decision to become a community worker on a deprived local housing estate. Experiences during this year enabled me to gain a deeper understanding of the social and cultural diversity of people that lived in my local area and I saw how actions, grounded in my values, could make a positive difference to a community.

Unsure about which career to follow, from 1977 - 1980 I decided to pursue my interest in the natural and made environment and studied for a B.Sc. degree in Environmental Sciences. With my deeply held values of respect, justice, diversity and inclusion, I focused on studying the 'people' aspects of the subject, such as our relationship with, and influence on, the environment, urban and rural planning and deprivation, as well as conservation issues. This experience of designing an urban trail for my dissertation made me realise how much I wanted to work with children so I decided to pursue a career in primary teaching.

I selected a postgraduate initial teacher education programme that provided me with the opportunity to undertake my school experiences in East London and also worked in a home for women and children who had experienced domestic violence, in order to understand the social context from which some of our pupils came. My concern for social justice and values of respect, inclusion and equality influenced this decision. Being in a situation where women and children had been treated with extreme disrespect, abuse and injustice strengthened my desire to provide a learning environment where children felt loved and respected, as well as safe and secure. In school, I observed dedicated teachers working with compassion and enthusiasm with children from a range of social, cultural and economic (mainly deprived) backgrounds. I saw how these teachers developed children's self esteem and love of learning, grounded in shared values of love, respect, justice, equality and inclusion. I wanted to be an innovative, creative and enthusiastic teacher, able to motivate children to learn, working with people who shared similar values, dedicated to making a positive difference to improve the children's lives and enabling them to learn and develop.

I decided to stay in East London for my first teaching appointment, which was rewarding but challenging. My enthusiasm was maintained by my colleagues, the children and by my deeply held values of love, justice, respect, tolerance and kindness. I believed I was making a positive difference to the children and, as important, they were making a

difference to me. By interacting with the children I learned ways to help children develop love and respect for others and work with them to resolve disagreements and achieve justice.

After a few years of teaching across a range of ages, I took on a new role as a Primary Science Advisory Teacher working with teachers in London to develop innovative and creative science curricula. This development of my professional self allowed me the freedom to work in a way that was commensurate with my values of diversity, equality and inclusion and commitment to experiential learning. This led to a number of opportunities for writing and I later began my current occupation as a senior lecturer in initial teacher education, which I have been doing for a number of years now.

In my current professional role, I am given the freedom to live many of my deeply held values in my practice, supported by a team that share many of my values such as love and respect for the students with whom we work. However, I became aware that there were aspects of my practice that I wanted to improve. Therefore I commenced a Masters degree and the research that I will outline to readers of this paper.

My action enquiry

For reasons that I give below, I decided to carry out an action enquiry into my practice to improve the learning experiences of those in whose learning I may have an educational influence and to enable them to become more critical and informed designers, citizens and teachers. The research was carried out in two phases. Phase 1 was from September 2006 to January 2007 with 16 participants, and Phase 2 from September 2007 to March 2008, with 18 participants. The participants comprised two cohorts of undergraduate students, in their second year of an initial teacher education degree programme. The module on which I chose to focus my research was Food Technology.

I have been undertaking research into my own practice in order to improve it, as a practitioner 'reflecting on action' (Schön, 1995). I agree with Ghaye and Ghaye (1998, p.3) that reflection on practice is about 'knowledge production that has the potential to enlighten and empower teachers' and that it can help teachers 'envision, nourish and imagine improved teaching and learning situations'. My main aim was to develop my own living educational theory (Whitehead, 1989) based on a clear understanding of my practice, having completed the first and second phase of my systematic action enquiry. This enquiry, which I explain in more depth below, has enabled me to develop a more critical and emancipatory pedagogy.

The research methodology I selected is that of self study action research, as described by McNiff and Whitehead (2006), as this form of research is commensurate with my ontological and epistemological values, which includes the need for self reflection and holding oneself accountable for one's practice. The process that I followed was that of an action-reflection cycle.

My concern

Like Horton and Freire (1980), I believe it is impossible to remain neutral in education and that education can help us to understand the world we live in, and prepare us to transform it. In order to transform the world, Freire (1970) believed that it is necessary to connect with the larger realities in which people live. Food technology is an ideal context as 'food production and the impact this has, brings issues of social justice and sustainability sharply into focus, giving us opportunities to become informed and take action for positive change' (Reading International Solidarity Centre Enews Bulletin, 2006, p.1). As a convenor of a food technology course, I was concerned that I did not provide enough opportunities to develop students' awareness and understanding of some local and global issues concerning social justice and the environment. I wanted to encourage the students to develop a greater capacity for critical consciousness (Freire, 1974) around these issues. I believed this would help me to develop a more critical form of pedagogy which would 'stress forms of learning and knowledge aimed at providing a critical understanding of how social reality works' (Aronowitz and Giroux, 1986, p.217). I 'take seriously the need to give students a voice in their learning' (ibid: p. 36). I was concerned that I did not include sufficient opportunities for students to contribute in sessions and to engage critically with their learning. Therefore I wanted to develop a more critical and emancipatory form of practice.

My overarching research question at the beginning of my enquiry was, *'How can I improve my practice to enable students to develop their knowledge, understanding and awareness of some issues relating to global citizenship in the context of food technology?'*

In the first phase of my enquiry some of the evidence (see below) showed that students were still unsure about some issues around sustainability. This potentially compromised my values concerning respect for the environment. Also, I felt that I could include more learning opportunities for students to participate in sessions and reflect at a deeper level on their learning, which represented a manifestation of my emancipatory values. Therefore, in the second phase of my enquiry, I focused on developing a more emancipatory pedagogy to support learning about sustainability.

Why was I concerned?

At this point I itemize the main reasons for my concerns as

- Education for sustainable development and global citizenship with links to my values
- Pedagogical concerns

Education for Sustainable Development and Global Citizenship

My growing concern has been stimulated by the raised profile of Education for Sustainable Development (ESD) and Global Citizenship (GC), both nationally and at my institution. My awareness of environmental issues and injustice in world trade has increased, and I now view myself as a citizen in a global community with the associated

responsibilities I have for other people and the environment. I have become increasingly aware of some of the environmental difficulties that are developing due to a lack of respect for the world's resources. This is supported by a recent report by the United Nations Environment Programme (2007). The report was summarized by Smith (2007) and highlighted many environment concerns. I believe that we, as a community at local, national and global levels, are at an important transition point, and that decisions we make now about how we live our lives will affect not only our own future but also those of other people and the natural environment. Freire (1974) suggests that in order to transform reality, people cannot simply adjust to it but need to integrate with their context by adapting to reality and make critical choices to transform it. In Design and Technology, learners can be encouraged to integrate with their context as designers and citizens and think about how they may transform it by learning how choices they make can have an impact on other people and the environment. I agree with Benson and Lunt (2007) who suggest that, by focusing on issues of sustainability in design and technology in primary schools, teachers 'can help children to develop the knowledge and skills they need to bring about positive change and build a sustainable future'.

In order to influence change, learners need to be given the opportunity to think critically about global issues. This links with the aims of Education for Global Citizenship (Oxfam, 2006) which, although not a statutory part of the English curriculum, I believe is of key importance. This is not a new idea. Bertrand Russell wrote that 'the most vital need of the near future will be the cultivation of a vivid sense of citizenship of the world' (1932, p.27). Howe, Davies and Ritchie (2001, p.126) see 'the aims of citizenship education as emancipatory and empowering i.e. helping children to take control of their lives and things that matter to them.' I agree with their view that 'this shares many of the ideals of design and technology, which aims to help children believe they can change things for the better.' Advocates of a critical pedagogy such as Habermas (1972), Giroux (1987, 1988) and Apple (1996) would support this philosophy of education in order to emancipate and empower people in a social democracy. Giroux discusses his views on critical pedagogy, and how Freire has influenced his thinking, on <http://www.youtube.com/watch?v=UvCs6XkT3-o&feature=related>. Freire (1974) believed that teachers should work in reflexive and transformative ways in order to challenge the dominant cultural values in society, and that education can provoke the learner's consciousness. Holden and Clough advocate that inclusion of a participatory approach to citizenship education in schools 'is for the benefit of both children and democratic societies' (1998, p. 13). The subject of food technology provides many opportunities to enable students to make a positive contribution by helping to shape future society as constituted of informed participating global citizens.

Links to values

Actions we take as citizens and educators are strongly influenced by our values. The English National Curriculum states that 'education should reflect the enduring values that contribute to personal development and equality of opportunity for all, a healthy and just democracy, a productive economy and sustainable development' (QCA, 1999). The values identified relate to self, relationships, diversity in our society and the environment. Oxfam (2006) identifies similar values as principal components of a curriculum for global citizenship,

including: commitment to social justice, concern for the environment and commitment to sustainable development. These values are ones I share, as I feel passionate about my responsibility towards the natural environment and to people in the global community and why I felt committed to undertaking this research project. I became increasingly concerned that these values were not being realised sufficiently in my practice.

Pedagogical concerns

In order to facilitate learning, I have always ensured that my teaching incorporates a range of experiences where students are actively involved in learning, based on Kolb and Fry's model of experiential learning (1975), later developed by Jarvis (1995). I agree with Freire that education is never a simple matter of the transmission of knowledge and 'banking' facts (1970, p.53). This is a model where teachers are regarded as depositors who make 'deposits' of knowledge for students to receive, memorise and repeat. A video clip summarising Freire's banking model of education can be watched on http://www.youtube.com/watch?v=K5zbnE_0XQ. I believe that it is important that learners engage with their learning and think critically about their experiences in order to develop. As well as encouraging critical engagement, I also believe it is important to give students a voice and encourage them to contribute in sessions. I was concerned that I was not practising a sufficiently emancipatory form of pedagogy, where students can express their ideas freely, and where each individual's opinion is respected. I felt that often I was not providing students with enough opportunities to contribute in sessions and to express their views openly.

What actions did I take? What did I do?

Carrying out the enquiry

To select the most appropriate research methodology for my enquiry, I considered my ontological stance, because I agree with Bullough and Pinnegar (2004) that, 'The consideration of one's ontology, of one's being in and toward the world, should be a central feature of any discussion of the value of self-study research' (p.319). I saw myself as part of the group with whom I was researching. I believe that my learning and that of the students with whom I work are interrelated. Like Freire (1970), I believe that teachers and students have much to learn from each other. I planned to research my own practice with 'I' at the centre of my enquiry rather than adopting a spectator approach. My epistemological perspective also influenced my choice. I believe that new knowledge can be created and living educational theories (Whitehead, 1989) can be developed by studying one's own practice. I decided that self study action research (McNiff and Whitehead, 2006) was the most appropriate form of enquiry, as it is commensurate with my ontological and epistemological values.

Ethical issues were considered throughout the research. This involved: negotiating and securing access, protecting participants and assuring good faith (McNiff and Whitehead, 2006). Permission to do the research was obtained using established ethics procedures at

my institution, and written and informed consent from all those who volunteered to take part. I respected issues of access, confidentiality and the right to withdraw from the research. To ensure confidentiality in my analysis of data and evidence, each participant has been allocated a letter followed by a number. The number represents the cohort and phase of the enquiry (for example, participant A1 was in cohort 1 in the first phase, whereas participant A2 was in the cohort 2 in the second phase).

Developing my learning

To develop my learning I engaged critically with literature about educational theory, global citizenship and sustainability (and links with D&T). I met regularly with my critical friends to discuss plans to improve my practice and discussed my research with a validation group, consisting of other researching practitioners at my institution and my supervisor. I also learnt through what Hannah Arendt described as two-in-one-dialogue. She believed that the consciousness of self, brought about by thinking, can promote a dialogue of 'myself with myself' (1978, p.185). This form of internal dialogue has helped me to develop my ability to think at a deeper, more critical level, and therefore make more considered judgements before taking any action. For example, I read about some global issues in the context of food technology and researched interactive activities that I could use to stimulate discussion and critical thinking. I then integrated the activities into my plans. Much of this is recorded in my reflective diary (discussed later).

As a result of the learning conversations, critical engagement with literature and much thinking and reflection, I took actions to improve my practice. I decided to add some interactive learning experiences to develop students' knowledge, understanding and awareness of a range of environmental and social issues linked to food technology. I reviewed the existing course and incorporated more opportunities for students to discuss and think critically about issues raised. I planned less teacher led learning and allowed more time for students to develop their thinking and express their opinions in sessions. In addition I asked students to complete a portfolio in which to record their learning experiences in each session and critical reflections on their learning each week. I found that this gave them time to do more independent research and spend more time reflecting on what they are learning. I believe that grounding such actions in my values ensured that sound judgements were made. Fullan (2001) suggests that moral purpose is an important factor in changes made in organizations and society. He defines moral purpose as 'acting with the intention of making a positive difference to the lives of employees, customers and society as a whole' (p.3). Changes I made were grounded in my values so that I ensured I was making judgements with a strong moral purpose. I led changes in a sustainable way 'developing and preserving what matters, spreads and lasts in ways that create positive connections and development among people and do no harm to others or in the future' (Hargreaves & Fink, 2006, p.17). The changes I made to my practice are summarised in Table 1.

Table 1. Changes made to my practice during phase 1 and phase 2 of the research enquiry

Focus	As it was (2005)	As it developed: Phase 1 (2006)	Phase 2 (2007)	Related values
Environmental issues	The possibility of considering organic ingredients when designing food products was only briefly considered. No opportunities to learn about sustainability were included. Foods were not composted and paper plates were used which were not recycled.	Provision of organic ingredients in all design and making activities. Inclusion of initiatives for Sustainable Schools and identifying links with food technology. School visit to facilitate related discussions with children. Recycling of all waste food and paper/ card/ tin cans.	Continued but with more discussion about sustainability. Composting and recycling made more explicit. Activity to evaluate the eco-footprint of a child's confectionary product. Role-play focusing on informed decisions as purchasers of food products.	Respect for the environment. Freedom of expression Democracy Emancipation.
Social justice	Inclusion of some fair-trade biscuits when evaluating products and a brief discussion about what fair trade means and the implications of fair trade issues on producers and consumers (i.e. purchasers of food products).	Range of experiences to increase participants' knowledge of fair trade and understanding of the issues. Inclusion of fair trade products in all design and make activities, evaluating fair trade products, using websites and packages to find information, watching a DVD, participation in an experiential Fair Trade game and discussion about value as a learning experience. School visit to facilitate discussions about fair trade with children. Displays included resources that can be used to teach children about fair trade and other support materials.	Continued. Introduced the Global Compass Rose as a way of exploring issues. Role-play activity to promote discussion about fair trade and other issues.	Social justice Respect for others. Freedom of expression Democracy Emancipation.

Focus	As it was (2005)	As it developed: Phase 1 (2006)	Phase 2 (2007)	Related values
Use of a portfolio to develop critical thinking/ reflection	No portfolio.	Students created a portfolio of learning experiences undertaken during the course.	Portfolio continued as before and also included weekly reflections on learning.	All the above.
Making informed decisions as purchasers and designers of food products	Fair trade, organic and food miles not highlighted as a consideration as a purchaser or designer of food products.	Discussions included criteria considered when purchasing a food product including fair trade and environmental issues (such as organic farming and benefits of buying seasonal, locally sourced products).	Focus on the Sustainable Schools government strategy. Informed decisions – comparing choices at beginning and end of course. More discussion about complexity of issues.	
Links between global citizenship and food technology	No discussion about global citizenship and links to food technology.	Participants defined what being a global citizen means to them. Discussion about ways to develop knowledge, understanding, skills, values and attitudes associated with global citizenship through food technology.	Continued discussion about ways to develop knowledge, understanding skills, values and attitudes through food technology.	

Collecting data to show the situation as it is and as it unfolds

I monitored my practice and collected data to generate evidence that showed improvements in my practice. I critically reflected on developments in my own learning and in the learning of students in which I may have had an educational influence. The methods I used to collect data were: a personal reflective diary, course evaluations and participants' portfolios (which included personal reflections on their learning in phase 2). In phase 1, I also used semi-structured interviews to collect data. Below I describe in detail how I used these methods to collect data in order to generate evidence.

My reflective diary

In both phases 1 and 2 of my enquiry, my reflective diary enabled me to keep track of developments in my learning and of the learning of participants. I made notes about learning from critical engagement with literature, learning conversations as well as personal reflections. In the initial stages of my enquiry I commented that I found the amount of information available overwhelming so I had to select areas that I thought would be useful to future teachers. Some issues are also very complex so I had to think of ways to develop some understanding, whilst remaining aware that there is always more to learn and understand. In my diary, I critically analysed each session. For example, following the introduction of a role-play activity where students thought about whether they would pay more for organic or fair trade biscuits I noted: 'that the session stimulated a lot of debate about issues'. I wrote that: 'the discussion raised many dilemmas one faces with decisions one makes as buying a fair trade product may benefit the farmers who are members of a fair trade co-operative but not those farmers who are independent. One also has to balance this with buying locally sourced products and/or organic products as this may be of benefit to the environment and local communities.' I commented that: 'one student (who used to be a farmer) suggested buying British food. I helped to link this to considering buying locally sourced products.' Another activity I introduced was to use a matrix which helped participants to think about how they would develop thinking about global issues through food technology then discuss what it means to be a global citizen. I noted that: 'this was a really useful activity and the students came up with some great ideas.' My diary entries show my constant struggle with my own role in sessions. I had to be very conscious to take less of a lead in sessions and give space for students to contribute and interact with one another. I commented that: 'I am learning to bring in more opportunities for discussion' which was necessary to develop a more emancipatory pedagogy.

Semi structured interviews

A focus group of three participants took part in semi-structured interviews after the course in phase 1 of my enquiry. Questions I asked provided data regarding participants' understanding of fair trade and environmental issues and which experiences in the course had influenced their learning. Tape recording of the interviews (kept in my data archive), followed by written transcripts, ensured that accurate records were kept. Most interview questions were open to promote discussion and aimed 'to develop conversations that lead to enhanced insights' (McNiff, Lomax and Whitehead, 2003, p.124). Full written transcripts of the interviews can be found in Appendixes B, C and D. I divided the interviews into two sections: Fair trade and Environmental issues. Initial questions in each section concerned students' understanding of terms. All three interviewees seemed to have a good understanding of fair trade as shown in the following extract from the interview with participant B1:

Sally: What do you understand by the term 'fair trade'?

Participant B1: Fair trade to me means, if you are buying a fair trade product, the people that have worked to make that product know what it is to have received a fair wage and are

treated as equally as you would expect them to be treated here in terms of rights and things like that. (S. Aston & participant B1, personal communication)

I also asked questions to find out which learning experiences had contributed to their growing awareness. The fair trade role-play game I introduced seemed to be a successful way of encouraging participant B1 to think about issues raised:

Sally: In the course evaluation you wrote that your level of knowledge, understanding and awareness of fair trade has changed from 3 to 5. Which aspects of the course do you think have influenced your learning in this area?

Participant B1: I think that the actual chocolate game we played helped quite a bit because you could see the difference between (*hesitation*) because I was working as an independent farmer, it was really, really unfair for us because we were being cut down all the time. So you can appreciate the issues that they would suffer in their own countries working really hard to produce the resources you would need for chocolate but they're not being given a fair amount of money and so you would know that would obviously impact on their livelihood. We were joking about pleading with people because we couldn't feed our families but that would be a true scenario.

Sally: So did you feel that this actually put you in that position?

Participant B1: Yes, I think so. To be put in that situation it was almost as first hand as you can get in a primary school so I think you can empathise with the role that you are playing and because it is a team effort as a class you have time to discuss it so you can appreciate other people – how well they have done out of this game. (S. Aston & participant B1, personal communication)

This extract provides evidence that this interactive activity was successful in developing participant B1's critical awareness of issues relating to fair-trade. Participant C1 said that: 'it really helped me understand because it was from the farmer's point of view.' However participant A1 found activities such as looking at packaging of fair trade products more useful and: 'From there I developed my own ideas and included these in my portfolio.' This participant did not contribute in sessions as much as participant B1 but reflected more in her portfolio. Participant C1 found a range of activities developed her awareness.

I also asked about their understanding of environmental terms. For example, when I asked participant B1 what organic means to her she responded: 'Organic to me is a product, usually a natural product, that has had no chemicals or pesticides placed on it during the growing period so it has just grown naturally.'

The other participants also had a good understanding of this term. When asked which aspects of the course had developed her awareness of environmental issues, participant B1 referred to the discussion we had about sustainable schools:

I think looking at schools as a whole as I've probably only ever seen it as individuals doing things – being a community, a school community working together. Where you can see how much you can achieve by recycling and companies taking the paper can tell you how many trees you've saved. It can be a whole school effort to think about environmental issues. I think with all the global warming going on – it makes you think about it more and it makes you think what everyone can do. (participant B1, personal communication)

This provides evidence of some critical reflection about the issues. However, comments from participants B1 and C1 interviewed in phase 1 of my enquiry indicated that I tried to include too much information in the last session, which may have hindered development of learning and thinking about sustainability and the government's Sustainable Schools Strategy (Department for Children, Schools and Families (DCSF)). I also felt that there was a need for more opportunities to reflect and think critically on learning, so I decided to use the portfolios for this in phase 2.

Participants' personal portfolios

In phase 2, the participants' portfolios became a very rich source of data. These took the form of A3 books in which participants kept a record of their developing knowledge and understanding and wrote weekly reflections on what they had learnt. I hoped this would encourage participants to become more critically engaged with their learning and provide richer data from which to generate evidence to support and test the validity of my claim to knowledge. I looked for evidence of students' learning in three areas: sustainability, fair trade and making informed decisions.

Sustainability

One of the activities I introduced involved disassembling a children's confectionery product and considering the 'eco-footprint' made by tracing the journey of each component from its source to the consumer, then thinking about how waste is disposed of¹. Evidence from the portfolios showed that the Eco-footprint activity developed participants' awareness of, and encouraged them to think critically about, the impact of their actions on the environment. Participant C2 commented: 'Looking at the eco-footprint of a Kinder Egg was really interesting. It certainly made me more aware about the impact of the production of a single product has on the environment.' Some participants linked this to their future role and responsibility as a teacher such as participant I2 who wrote that the session focusing on sustainability: 'really got me thinking about the impact we have on the environment and as a future teacher the responsibility we have to teach this to children.' Another participant, M2, became more conscious of the complexity of issues and the implications of this in her role as a teacher. She wrote:

The Kinder egg activity made me realise just how many ingredients go into one product and just how far some of these are imported. The eco-footprint created by importing these ingredients is quite worrying, but then by purchasing these we are helping to create work and putting money into less developed countries. There are both positive and negative views to this and both points need to be considered. This is very important for children to learn. (participant M2, personal communication)

¹ This resource is available from the Centre for Alternative Technology Education http://www.cat.org.uk/education/ed_content.tmpl?subdir=education&SKU=ED_62.

Participant D2 commented that she has become more conscious of such issues as she wrote:

I have realised personally that I have a big eco footprint. I did not consider before this lecture the effects the foods I eat have on the environment. I think I will be more self-conscious about the products I buy and where they have been made. (participant D2, personal communication)

More of the comments from participants about sustainability can be found in Appendix E.

Fair trade

Reflections in the participants' portfolios demonstrate that the fair trade role-play game influenced their thinking and developed their critical consciousness of issues. As data from interviews also showed, this interactive game helped to develop knowledge and understanding of how farmers in developing countries are affected by world trade. It seems to develop a sense of empathy for the farmers. For example, participant C2 wrote:

Taking part in the chocolate game was a great experience. Not only was it fun, but I thought it was a very effective way of experiencing what it is like to be in other people's shoes for a while. It made people really think about how cocoa is sold and what problems the different people involved have to face. (participant C2, personal communication)

As participants developed an understanding and awareness of the issues, they began to think critically about their responsibilities and the possible actions they could take to improve conditions for farming communities. For example, participant R2 wrote: 'I feel that I have a greater understanding and stronger feeling towards fair trade. I now make a conscious effort to buy fair trade wherever possible.' Some students became conscious of the complexity of issues, such as participant P2 who wrote:

From closely studying the global compass rose concept and its purpose², and undertaking my independent investigation concerning the fair trade banana, I now have a greater and more informed understanding. I was amazed at the complexity of issues surrounding the production of a single fruit that I eat on a regular basis and subsequently take for granted. (participant P2, personal communication)

Participant B2 reflected on how the game has influenced her purchasing decisions:

I have learnt a lot about becoming a good global citizen; this has made me reconsider the 'Fair-trade' position. I now wish to support those in the third world who struggle to gain the benefits of their work... this process has made me reconsider what I am buying... and for what reasons. (participant B2, personal communication)

More reflections on learning from participants about fair trade can be found in Appendix F.

² See <http://www.tidec.org/GL%20toolkit/Secondary%20handbook/2c.50%20Compass%20rose.pdf> for explanation of the development (or global) compass rose.

Informed decisions

I also looked for evidence from the portfolios to find out if participants were thinking more critically about the decisions they make when they purchase food products. One activity I did at the beginning and end of the course was to discuss which factors influenced their decisions as purchasers. Participant M2 commented that this activity: 'shows how individuals can contribute to society'. P2 wrote that the activity has: 'improved my learning of how to make a positive impact to on the world around me'. Some participants commented on how the course generally had influenced their thinking. For example, participant A2 wrote:

I feel that taking part in this course has really benefited me and made me aware of the impact of my decisions. It was really interesting to look again at my informed decisions and compare them to the ones I chose before the course as it shows a difference in what I would choose. I feel the difference is due to the fact that I am now more informed on issues relating to food such as fair trade, quality, organic and free-range. (participant A2, personal communication)

A comment from participant D2 suggests that she has thought about how decisions we make influence equality in the world as she wrote: 'If people took the time to make an informed decision about what they bought then the world would become a more equal place to be in.' I believe that these comments and others (see Appendix G) provide evidence that these students were thinking more critically about the impact their actions have on the environment and other people.

Lecture plans

My lecture plans show how my developments in my learning influenced actions I took to improve my practice. I encouraged participants to work co-operatively and collaboratively on many occasions. For example, participants worked together when playing role-play games, designing and making products and completing the global citizenship matrix where they identified ways to develop global citizenship through food technology. I offered many opportunities for discussions to enable students to express their opinions about issues. In phase 2, I allowed more time for discussion following activities such as the fair trade game and I added a biscuit role-play activity to encourage participants to discuss decisions they make as consumers of food products. The extract below from lecture notes of session 2 of the course shows how I incorporated the activity collaboratively to consider the eco-footprint of a confectionery product and opportunities for discussion to develop thinking and learning and give students a chance to express their opinions.

1. Thinking about where products originate can help us learn about the impact we may be having on the environment. We are going to do some activities now to show how we can develop this with Key stage 2 children (7-11 year olds).
2. You could start by looking at a bag of shopping. Children can find out where the food comes from. Plot on a world map – lead into discussion about why it might be better for the environment to buy locally sourced products.

3. Activity 1 – whole class. List main materials used to make a can of soft drink.
4. Start with can. Where does bauxite come from? Quarries then smelted
5. Go through journey – students standing up holding cards representing mode of transport used for each stage of journey (e.g. lorry, plane).
6. Activity 2 – whole class. Next go through journey of sugar. Could do the same with other ingredients and map on a map (Handout 1).
7. What happens next? Discuss. Could do with transport cards as before.
8. Activity 3. Kinder eggs - small groups. Disassemble eggs and toys inside. List all materials used.
9. Use small cards to track journey of plastic, chocolate and metal.
10. What happens in the next stage of the journey, from factory to shopper? Discuss. Record as flow chart on large sugar paper.
11. What other issues could you discuss? Work in groups to list. Show slide of ideas.
12. Remind about sustainability/ sustainable schools.
13. Look at table matrix listing knowledge, skills, values and attitudes of global citizenship. Discuss how these activities would be developed through Food technology. Stick in portfolio and annotate. Bring to next session to discuss.
14. Simple taste test of fair-trade and organic chocolate.

The second extract from the lecture plan for session 7 shows how I developed the directed task I gave to encourage thinking about ways to develop aspects of global citizenship through food technology ensuring I included opportunities for discussion.

1. Share ideas from directed tasks on links to global citizenship – combine ideas in larger table.
2. What qualities do you think someone who sees themselves as a global citizen has? Discuss. Oxfam slide.
3. A lot of links between D&T, PSHE and citizenship.
4. Children as citizens – discuss what this means to students.
5. Links to Every Child Matters³.
6. Making informed decisions. When you buy food what considerations affect your choice? Discuss. Has this changed? Add new ones to your portfolio. Colour-code original considerations or do new one – reflect on any changes.
7. Freshness, appearance, personal preference, healthy, nutrition, cost, animal welfare, fairly traded, locally produced, seasonal, disease free, quality, good to wildlife. What else do you consider? Why? Discuss in small groups. Feedback to class.
8. Write on cards and arrange in order of preference (some may be on same level).
9. Stick in portfolio. Reflect on your learning.

The third extract from the lecture plan for the same session (session 7) shows how I introduced the fair-trade game and opportunities for discussion.

1. Show some of DVD about the fair-trade community producing chocolate for background information.

³ The UK Government's approach to the well-being of children and young people from birth to 19 (<http://www.dcsf.gov.uk/everychildmatters/about/>).

2. Introduce students to the experiential Fair trade game.
3. Put students into groups of independent and fair trade farmers, buyers from supermarkets, customers. Explain what each group does (p6).
4. If a bar of chocolate costs £1 – how much do you think each group of farmers gets? (p6)
5. Play the Chocolate Trade Game.
6. Go through seasons when conditions change.
7. Discussion about issues raised. How did it feel to be a fair trade farmer/independent farmer? What happened when the seasons changed? Who benefits when you buy a fair trade product? Who loses?
8. Reflect on learning in your portfolio.

The times for discussion incorporated in my plans were a crucial way of encouraging students to think more deeply about issues raised.

Course evaluations

Most participants completed an end-of-course evaluation which provided me with some quantitative data for phases 1 and 2. I believe that this data supports the evidence that I found from other sources, discussed above. Participants were asked to assess their level of awareness of some issues relating to global citizenship at the beginning and the end of the course on a scale of 0–5, where 0 is low and 5 is high (see Figures 1 and 2). I used this method to find out if the participants thought their levels of awareness had increased. I also asked which of the learning experiences had been most useful. This evaluation was completed by 14 of the 16 participants in phase 1, and 17 of the 18 in phase 2.

Environmental issues

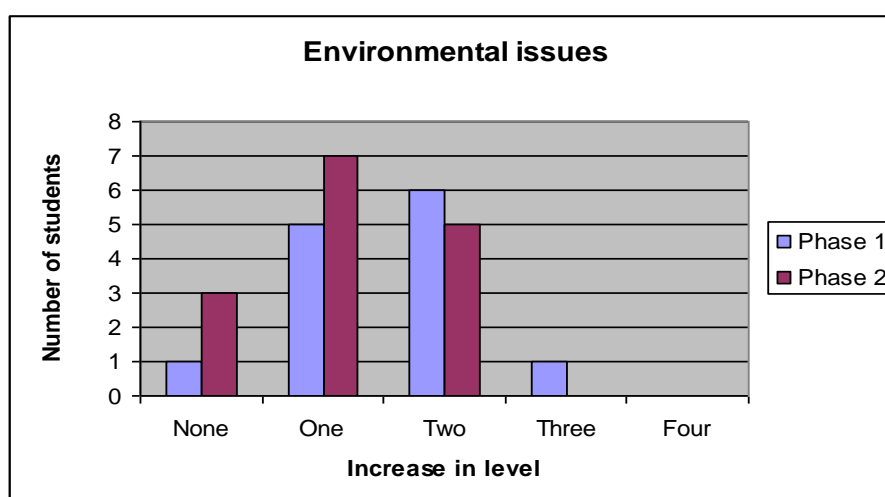


Figure 1. Graph to show change in participants' levels of awareness of environmental issues from the beginning to end of the Food Technology course in phases 1 and 2 of my enquiry⁴

The figure shows that most participants felt their level of awareness of environmental issues had increased by at least one level from the beginning to the end of the course. Those whose level did not increase felt their awareness of these issues was already high when they commenced the course.

Fair trade

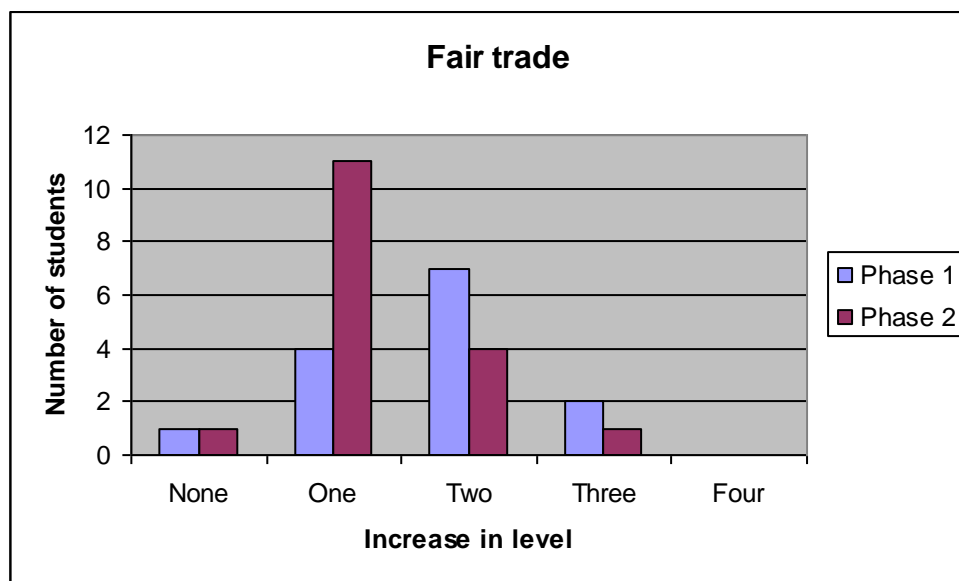


Figure 2. Graph to show change in participants' levels of awareness of fair trade issues from the beginning to end of the Food Technology course in phases 1 and 2 of my enquiry

The figure shows that in both phases, all except one participant felt their level of awareness had increased by one level or more. In the course evaluations, the fair trade game (with DVD) was identified by most students as having the most influence on their learning.

Ensuring that any conclusions I come to are reasonably fair and accurate and evaluating the validity of the evidence-based account of my learning

I have used criteria relating to ontological, epistemological and pedagogical standards and values to judge the validity of my claim to new knowledge (see Whitehead, 1989). My

⁴ One participant in phase 1 and two in phase 2 did not complete this part of the evaluation form.

critical friends and validation group used these living standards of judgement to test the validity of my claim, using evidence generated from data I had collected. They also drew on Habermas's (1976) ideas relating to social validity, as they enquired whether my account was comprehensible, authentic, truthful, and demonstrated understanding of the normative contexts of the research. By engaging with these measures, they endeavoured to ensure that the conclusions I came to were reasonably fair and accurate. The living standards of judgement (Laidlaw, 1996) I identified were as follows.

a) Is my value concerning respect for the environment manifested more clearly in my practice?

My learning about environmental issues was developed mainly from literature, internet research and conferences about sustainability. Course outlines (Appendix A) and lecture notes (above) provide evidence of experiences I introduced as a result of my learning about organic products, sustainability and the environmental impact of products. Evidence generated from data from interviews (Appendixes B, C and D), portfolios (Appendix E) and course evaluations (Figure 1 and Figure 2) shows that these further changes made to my practice had a significant influence on participants' learning.

b) Is my value concerning respect for social justice manifested more clearly in my practice?

Entries in my reflective diary demonstrate developments in my learning about issues in world food trading, linked to my respect for social justice. Course outlines (Appendix A) and lecture plans (above) provide evidence of experiences I introduced as a result of my learning about fair trade. Evidence generated from data from interviews (Appendixes B, C and D), portfolios (Appendix F) and course evaluations (Figure 2) shows that these further changes made to my practice had a significant influence on participants' learning.

c) Are my epistemological and pedagogical values embodied in my practice?

I believe that my epistemological and pedagogical values have manifested clearly in my practice. My lecture notes provide evidence that I included key elements of a critical and emancipatory pedagogy including co-operative and collaborative work, discussion and experiential and reflective learning. I have encouraged participants to research independently and think critically about what they have learnt in order to develop their own understanding, awareness and critical consciousness of important issues.

In my reflective diary I noted how much some participants engaged in these discussions to express their points of view and that participants were keen to share ideas and learn from one another. Evidence from data collected from portfolios shows that this was valued also by the participants. Participant L2 thought it was a good way of using drama to introduce fair trade and organic products, rather than just giving information. Participant P2 stressed the importance of debate following an activity like the fair trade game. In the

last session of the course, in my reflective diary, I recorded how enthusiastically participants discussed ways to raise awareness of global issues through food technology activities and shared their ideas about what defines a 'global citizen'.

Experiential and reflective learning

My lecture notes provide evidence that I included many opportunities to learn in an experiential way, and participants were encouraged to reflect on what they had learnt, particularly in phase 2 in their portfolios. This was valued by the participants. For example, when interviewed, participant B1 (Appendix C) talked of the benefits of experiential learning and reflection. She said: 'Once you do something practical it stays with you and you take the memories and learn more from it' and when asked about the fair trade game she replied: 'I did reflect on that. I remember telling my friends about it as well and telling them about how it works and what is unfair about it. It throws up lots of scenarios.' Following the Eco-footprint activity participant N2 wrote: 'By doing practical tasks it puts you in the realisation about where things produced actually come from.' After the biscuit role-play participant K2 reflected: 'It was only through doing this activity that I realised how consumers can influence producers.' This provided evidence that the activity encouraged this participant to engage in the experience provided and then become conscious of how her actions can transform reality. Like Freire (1974), I believe that it necessary for learners to engage in this way with concrete activity, connected with life, in order to develop a capacity for critical consciousness.

I believe that I have developed a more critical and emancipatory pedagogy in which participants are critically engaging in their learning experiences. These experiences have influenced the decisions that participants now make as global citizens. The reflections made in the portfolios show how an increased knowledge, understanding and awareness of a range of issues have increased their capacity for critical consciousness. The activity where participants compared the factors they considered when purchasing a food product at the beginning and end of the course shows an increased critical awareness of how decisions and choices they make can influence change in society. Thinking critically about the issues and how this influences decisions is an important part of being an active citizen and feeling empowered to participate in a democracy (Claire, 2001).

Using the above values as living standards of judgement of my practice, my critical friends and validation group have scrutinised the evidence and validated my claim that 'I know ways to influence learning in terms of increasing knowledge, understanding, awareness and critical consciousness of some aspects of global citizenship though design and technology.'

The potential significance of this research

I believe that the significance of my research lies in my capacity to theorise my practice, as contributing to others' learning. I have identified areas in which I have improved my practice using my values as living standards of judgement (Laidlaw, 1996). As my claim has been validated in relation to these standards, I feel justified in claiming that I have generated an original living educational theory (Whitehead, 1989) to show how I hold myself accountable for my work, and hope that others will learn from it. I also believe my research meets the criteria of social validity identified by Habermas (1976), to show that it is honest, comprehensible, authentic and appropriate. This research has benefited the emancipatory

interests of both myself and the participants. We have all learnt from each other to develop a greater understanding of ourselves, our learning and our responsibilities. I believe that this research has enabled me to develop a more emancipatory practice by creating new knowledge through what Habermas (1972) describes as critical and evaluative modes of thought and enquiry. As well as transformation of myself, I hope my learning will benefit society as I have contributed to the capacity for critical consciousness of those in whose learning I may have had an educational influence.

Ways I can continue to transform my practice in the light of my findings

By undertaking this research I have identified ways I can continue to transform and improve my practice in future, as a practitioner reflecting in and on action. I believe that some participants have the capacity to develop a deeper level of critical consciousness. I feel that if I encourage students to make closer connections with the natural environment and the wider global community, their level of critical engagement will be raised and they will feel that they, as participating and informed citizens, can change things for the better. This is important as I believe we are at point of transition and the decisions we make and actions we take now are going to affect the future environment and life of many generations. At this time of transition we have reached what Freire describes as an 'historical epoch' which is 'characterised by a series of aspirations, concerns and values in search of fulfilment' (1974, p.4). As citizens, we can participate in these epochs by creating, re-creating and making decisions which will influence our future. I think that it is my responsibility in my position to influence both future teachers and, indirectly, their pupils, to encourage participation as citizens who have the power to instigate positive change in society. Like Freire (1970), I believe that educational practices have social (and, I would add, environmental) implications. They can perpetuate injustice and unsustainable practices or help to transform society. I believe, like Giroux (1988), drawing on ideas of writers like Dewey (1959), that the purposes of critical pedagogy 'not only empowers students by giving them the knowledge and skills they will need to function in the larger society as critical agents but also educate then for transformative action...in the interest of creating a truly democratic society' (1988, p.xxxiii). With this in mind, I want to continue to develop my learning of ways to improve and understand my practice; a form of praxis, that is, 'a morally committed practice' (McNiff and Whitehead, 2006, p.20), where I feel I comfortably inhabit my values.

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Appendix A

Food Technology Course outlines

Blue highlights indicate key changes made in phase 1 and green highlights indicate key changes made in phase 2 of my enquiry.

Table 1. Food Technology Course outlines

Week	2005/6 (Before research enquiry)	2006/7 (Phase 1 of research enquiry)	2007/8 (Phase 2 of research enquiry)
Week 1	Introduction to Food Technology Equal opportunities/inclusion Obtaining information from food manufacturers Useful websites	Introduction to Food Technology Equal opportunities/inclusion Evaluating food artefacts Useful websites	Introduction to Food Technology Equal opportunities/ Inclusion Informed decisions 1 Evaluating food artefacts Portfolio guidance
Week 2	Health and safety Allergies Evaluating tins of fruit. Simple taste testing	Health and safety Allergies Evaluating tins of fruit. Simple taste testing Labelling. Nutrition	Health and safety Allergies Sustainability Kinder egg eco-footprint activity. Simple evaluation Links with Sustainable Schools
Week 3	Design briefs and specifications. Technical vocabulary Allergies Food preparation skills, tools and techniques. Evaluating fruits. Multicultural and cross-curricular links	Design briefs and specifications. Technical vocabulary Allergies Food preparation skills. Evaluating fruits. Links to fair trade and organic/global citizenship Designing and making fruit kebabs (including organic and fair trade ingredients, as a choice) Multi cultural and cross-curricular links	Design briefs and specifications Nutrition/healthy eating Food preparation skills Evaluating fruits. Links to fair trade and organic/global citizenship Designing and making fruit products (including organic and fair trade ingredients, as a choice) Multi cultural and cross-curricular links Links to global citizenship

Week	2005/6 (Before research enquiry)	2006/7 (Phase 1 of research enquiry)	2007/8 (Phase 2 of research enquiry)
Week 4	Designing and making fruit salads Evaluating using taste tests	Ways to evaluate products with children Biscuits – sensory evaluation Fair trade and organic considerations Evaluate and discuss information on packaging of fair trade product Links with language and mathematics Designing own biscuits	Study week No lecture
Week 5	Planning food technology activities. Using the D and T Scheme of work. Ideas for extensions. Evaluating resources. Using ICT to support D&T Assessment Links with language and mathematics	Evaluation of biscuits (including organic and fair trade) Planning food technology activities. Using the D and T Scheme of work. Planning a unit of work on biscuits. Evaluating resources. Using ICT to support D&T Assessment Links with language and mathematics	Evaluation of biscuits (including organic and fair-trade) Global compass rose Sensory evaluations Fair trade and organic considerations Evaluate and discuss information on packaging of fair trade product Biscuit role-play Planning Using the D and T Scheme of work Using ICT Assessment Intro to festivals
Week 6	End of course - this year I was allocated 5 sessions	School visit	Directed task – festival research
Week 7	N/A	Introduction to Festivals. Links with global citizenship (cultural diversity)	Festivals presentations Links with global citizenship (cultural diversity)

Week	2005/6 (Before research enquiry)	2006/7 (Phase 1 of research enquiry)	2007/8 (Phase 2 of research enquiry)
Week 8	N/A	Visit to Sikh Temple (Gurdwara) Hounslow	Making informed decisions 2 Fair trade DVD and experiential game Discussion about issues raised Discussion of ways to learn about global issues through food technology
Week 9	N/A	Environmental and social issues connected with food Informed decisions Fair trade DVD and experiential game Nutrition	End of course. This year I was allocated 8 sessions
Week 10	N/A	Sustainable schools. Discussion of ways to learn about global issues through food technology Christmas and food technology	

Appendix B

Transcript of interview with Participant A1 (Phase 1 of enquiry)

Questions by researcher (in black italics) and responses from participant A1 (in blue)

Please respond to all these questions in the context of Food Technology.

Section A: Fair trade

What do you understand by the term 'fair trade'?

The producers get their fair amount of money so if they are working 12 hours a day they are not getting 1p; they're not getting their money's worth for what they've done.

Can you suggest ways of linking activities done in Food Technology to issues of fair trade?

For example, the biscuits we did –include products that children could use like chocolate, chocolate chips, fruit, dried fruit ...um...

Do you mean fairly traded products?

Oh, the kebabs. You could select fair trade products to put in them.

In the course evaluation you wrote that your level of knowledge, understanding and awareness of fair trade has changed from 3 to 4. Which aspects of the course do you think have influenced your learning in this area?

Definitely keeping the profile, especially the packaging activity.

Do you mean the portfolio?

Yes. The packaging that we labelled and you gave us a handout which explained what fair trade was how you incorporate this into D&T and it was cross curricular. From there I developed my own ideas and included these in my portfolio. I am quite confident going into schools now. All I have to do is go into my portfolio and I will know how it links with maths, English and science.

From my perspective, it appeared that you were stimulated by the activities to do your own research and find out more.

Yes.

What about the fair trade game?

Yes, it was quite fun doing that and you did get learning aspects from it like maths and literacy but there wasn't enough time and I think we need planning as well. It was good that we did it in class so all we have to do is go back to our portfolio and see we did this activity, especially as it was cross curricular as well.

Did you think the DVD was useful?

Yes, definitely. I didn't know the details that the video showed.

Was that about the right amount of information?

I think it was about enough and that stimulated the game we did.

What about the school visit? Did you link that with fair trade?

No, I did organic.

Section B: Environmental issues

What do you understand by the term 'organic'?

Anything that is natural and fresh with no chemicals or GM products.

What does 'recycling' mean to you in the context of food technology?

Just reusing what you've used like the skins of the fruits, you put them in the compost bin so you're putting back what you have taken and packaging can be recycled.

What do you understand by the term sustainable or 'Sustainable schools'?

What I remember from year 9...sustainable is taking something from the environment and putting back the same thing, whilst growing.

Can you give me an example that you might see in school to do with food?

Growing your own fruit and vegetables and using it for lunch. Giving it to canteen staff so they can prepare that or for food technology in the class. You could use it for a design and make assignment using food you have actually grown.

In the course evaluation you wrote that your level of knowledge, understanding and awareness of environmental issues has changed from 3 to 4.

Which activities do you think have influenced your learning in this area?

We looked at fair trade and organic – this seemed to go hand in hand with it.

Yes, we were often looking at both.

And free range came in to that.

Would you like to talk about your experience in school?

With the children, I asked them to think about organic food and 'could this be organic? Could it not be organic? How would you know?' We talked about the labels, what it meant to be organic, most didn't really know.

Did you explain this to them?

Yes, very briefly. We also did, in global citizenship, we talked about recycling – what would we do with the skins? Quite a few knew that we would put it in a compost bin. I also asked, with the plate we had used, what would we do with those? Do we put them in the same bag? Do we put them in a different bag?

That sounds like a really useful discussion

Yes.

It sounds like the school visit consolidated things for you in terms of how you will teach it.

Yes.

Did you find it useful?

Definitely. I would be able to go into my practice now.

Has it given you more confidence?

Definitely, yes. It was really, really useful.

Were you aware of recycling going on in the course?

Not until you said that, all the skins, I'm going to take them home.

I'm not sure how explicit I made that.

Appendix C

Transcript of interview with Participant B1 (Phase 1 of enquiry)

Questions by researcher (in black italics) and responses from participant B1 (in blue)

Please respond to all these questions in the context of Food Technology.

Section A: Fair trade

What do you understand by the term 'fair trade'?

Fair trade to me means, if you buying a fair trade product, the people that have worked to make that product what it is have received a fair wage and are treated as equally as you would expect them to be treated here in terms of rights and things like that.

Can you suggest ways of linking activities done in Food Technology to issues of fair trade?

Well, I guess in Food Technology, there are healthy eating schemes now which have lots and lots of fruit which can be bought fair trade so you could put that in. Choices as a consumer are part of food technology, whether you would buy fairly traded products ... more likely to buy it.

Would you do that with children?

Yes, I think I would and they would have the opportunity to decide for themselves whether they agree with fair trade themselves or not, whether they think it is worthwhile and obviously they might not be the people buying at the time but they have that knowledge for the future and they might have an impact on their parents.

In the course evaluation you wrote that your level of knowledge, understanding and awareness of fair trade has changed from 3 to 5. Which aspects of the course do you think have influenced your learning in this area?

I think that the actual chocolate game we played helped quite a bit because you could see the difference between... (*hesitation*) ...because I was working as an independent farmer, it was really, really unfair for us because we were being cut down all the time. So you can appreciate the issues that they would suffer in their own countries working really hard to produce the resources you would need for chocolate but they're not being given a fair amount of money and so you would know that would obviously impact on their livelihood. We were joking about pleading with people because we couldn't feed our families but that would be a true scenario.

So did you feel that this actually put you in that position?

Yes, I think so. To be put in that situation it was almost as first hand as you can get in a primary school so I think you can empathise with the role that you are playing and because it is a team effort as a class you have time to discuss it so you can appreciate other people – how well they have done out of this game.

It did work out well in the end. I didn't have quite enough people so was worried it wouldn't!

Yes, it was good. The game was definitely worthwhile. I think the only problem was that we used the resources too quickly.

I think I need to think about how I distribute them.

Maybe the sheet could be given every season because we made our cocoa with all the paper at the beginning before we started to sell.

I think I need more people higher up the chain to buy them – too many farmers, not enough buyers.

Even so, it worked out well.

Did you go away and think about it, go on to reflect?

Actually, I did reflect on that. I remember telling my friends about it as well and telling them about how it works and what is unfair about it and just really liked it. It throws up lots of scenarios. We did play a similar game in geography but it was just coins. It didn't quite have the same impact because it wasn't in relation to a particular product... It's the kind of thing that happens in real life so you can relate but it wasn't a specific consumer so it didn't hit home as much.

Did you feel that the DVD I showed you beforehand was useful?

I think that it was useful because you get to actually see where these people were living and how they live and how the cocoa is made so it embedded the real scenario for you. Maybe without that you wouldn't have felt so sympathetic for them because you could see real people working and how they had a way of distributing and paying them fairly. It made it seem more real for me.

I wasn't sure how much of that to show to get the right balance, to give you the information.

I think it was a way of showing it especially if you were doing it in school. For us, it's probably worth it. It gets you thinking about it before you play the game. It gets you into the role. You can actually see which role you are playing rather than being given a role and you're not quite sure how you should be and what decisions you should make.

I suppose it shows you the country as well.

Yes.

Can you think of anything else that we did about fair trade that may have influenced your learning, or any research you did yourself?

I think looking at the packaging and everything they tell you on it. It does give you a lot of information so it gives you a reason to buy it and I think that helps. It gives you an understanding and tells you what they are doing with the money in the community so makes you feel better about buying it.

What about the school visit? Did you have a discussion with the children about fair trade?

Yes, I did with the biscuits. We were talking about the ingredients. I can't remember which was fairly traded but I think we were asked for one ingredient at least to be fair trade. We talked about that and made sure the children knew what fair trade was, if they'd learnt

about it. But when we asked them what it was only one child could describe it. That child described it really well so I think they had some awareness but maybe needed a little bit more.

They're still young aren't they?

Can you think of any other way of developing learning in this area that could be put into this course?

I can't really think of anything else because it's quite a big subject and at the same time it's kind of small. You learn how it works and there's not much else to learn. You can learn what you can buy that is fair trade, look at packaging, and look at the cost, do the game to make you try and empathize, how it feels to be the farmer or not and how it impacts.

That seems to have had the most impact on you. Do you think doing one game was enough?

For me, I think one game was enough. I think all practical activities; they're so good for your knowledge. It's much better than sitting and listening to something or reading something. Once you do something practical it stays with you and you take the memories and learn more from it. So maybe another game would be good but I don't know whether it would be worth spending more time on a short course ... I don't think so.

Section B: Environmental issues

What do you understand by the term 'organic'?

Organic to me is a product, usually a natural product, that has had no chemicals or pesticides placed on it during the growing period so it has just grown naturally.

What do you understand by the term 'recycling'?

When you take a material and you can make it into a new material or the same material again. I don't quite know but I've always wanted to know more about it. I guess they break it down to its natural form and rebuild it.

What about in terms of food technology?

Oh, I guess composting.

Do you remember me composting food in the course?

I think I remember it being mentioned. We talked a few times about schools having composting bins and having a garden to grow vegetables and the links between that. I can remember it coming up in passing rather than thinking about it specifically.

I tried to bring it in but am not sure if I made it explicit enough.

It's difficult because they're things I'm aware of anyway. It's difficult to remember if any new knowledge came in.

What does sustainability in the context of 'Sustainable schools' mean to you?

I guess having vegetables, potatoes and composting, so rotating. If you're composting, using this as a fertilizer to grow your own vegetables.

Do you remember talking about this in the last session?

I remember the worksheet.

I only touched on this so will revisit it in the next part of the course.

From the last lecture I remember the sheets we had about knowledge, learning and understanding.

To do with global citizenship?

Yes. We went through all the topics we had done throughout the course.

Was that useful?

Yes, it did link it all together then we did think about everything we had learnt and when we could place activities into what topics and how we were going to teach it.

Oh good, I'm glad it was useful. I think my mistake was trying to do Sustainable Schools at the same time. We'll come back to that in the summer.

I must admit, I can't remember much about sustainable schools.

Can you think of ways of linking activities in food technology with environmental issues? Take organic first.

When you're giving children the choices to make foods, and designs, make them aware of organic.

What did you do in school?

With the biscuits? We talked about ingredients. We had one fair trade, one organic and free-range eggs. We talked about all of these and they knew what it was and they did actually know.

If I remember rightly, your group was quite aware (of issues) – you discussed free range didn't you?

Yes. They discussed it and actually had good vocabulary for it as well as describing the chickens cooped up in cages. They said free-range chickens could walk around and were happier. They did have a good understanding. With the organic, they used words like pesticides and chemicals.

It sounds like they knew quite a lot about animal welfare.

Yes, I think so. It's kind of hard to think of an activity for organic but if I did want to teach something about organic specifically I'd probably look at the Oxfam website because they do have lots of activities.

I don't know whether you do need to teach it explicitly. I think the suggestions you made incorporating it as a choice....

Kind of mentioning it.

We're not here to tell them they have to buy something. In my view, we are just opening their minds to that as a choice.

They can choose.

Yes, they can choose whether to or not but to make an informed choice, you've got to know what it (organic) is.

You could go into more detail because you could link chemicals and pesticides... I don't know how deep you'd go because it's probably quite controversial but obviously chemicals and pesticides could be linked with illness. So you could make them aware without going into depth because it is quite sensitive.

And you could link with sustainable schools if children are growing their own vegetables.

How would you link food technology with recycling?

I think just demonstrating good habits like you did in class because you were composting food that we were wasting. Also, if we had any packaging left over that was card that went into the recycling box and so on. So by demonstrating to children and explaining why you are doing it, and giving the children the opportunity to do it as well, you could have a school initiative to recycle so the children get use to recycling.

In the course evaluation you wrote that your level of knowledge, understanding and awareness of environmental issues has changed from 3 to 5. Which aspects of the course do you think have influenced your learning in this area?

I think looking at schools as a whole as I've probably only ever seen it as individuals doing things – being a community, a school community working together. Where you can see how much you can achieve by recycling and companies taking the paper can tell you how many trees you've saved. It can be a whole school effort to think about environmental issues. I think with all the global warming going on – it makes you think about it more and it makes you think what everyone can do.

Would you say that doing the course has raised your awareness or has this been due to external influences?

I think doing the course has made me reflect on it more so therefore I've opened my mind to it more and learnt different ways of recycling and the whole environmental issue has been raised through the course. Even though I was quite aware before doing the course, thinking about it every week and the way you incorporate it into schools has made me more and more aware of how important it is to get the message across. So it's probably not necessarily my knowledge that has gained but I feel it is more important to me to really embed it, not force it down their necks, but incorporate it into their every day in the classroom so they go to the recycling bin automatically.

It sounds like you are seeing yourself more as the teacher and how you influence children's learning.

Yes, it's moving on.

Also, I suppose you can give it a context with food.

Yes, you can think about what things to buy.

Appendix D

Transcript of interview with Participant C1 (Phase 1 of enquiry)

Questions by researcher (in black italics) and responses from participant C1 (in blue)

Please respond to all these questions in the context of Food Technology.

Section A: Fair trade

What do you understand by the term 'fair trade'?

Being fair to farmers, I guess in the third world countries who've had it rough for a while and basically this organisation, this charitable organisation (I don't know who it's set up by) but they've come in and basically buy their products and sell them on as fair-trade products giving them a basic wage to live on. Basically, we're all aware of poverty and the hardship of farming in the third world so this fair trade brand gives us an opportunity as consumers to really think about what's going on and appreciate they need a decent wage to live on.

Can you suggest ways of linking activities done in Food Technology to issues of fair trade?

I really enjoyed the taste testing of fair trade products because, honestly, my preconceptions of fair trade products is that they're very expensive and they don't taste as good as the ones I'm usually buying so it opened my eyes to the quality and that they really are helping the community and they are not as bad as you think they might be.

Did you think they would be less good?

Yeah, I wasn't too sure about it at first. I don't think I have ever tried fair traded products before that lecture and it really opened my eyes.

OK, that's interesting. Thank you.

In the course evaluation you wrote that your level of knowledge, understanding and awareness of fair trade has changed from 3 to 4. Which aspects of the course do you think have influenced your learning in this area? Can you suggest other ways of developing learning in this area?

Basically, I'd heard of fair trade the brand but I didn't know anything about it.

Ok, so what kind of things... you've already mentioned the taste testing... did you mean the biscuits?

I think it was the biscuits and the chocolate, and the game as well and the resources that you used in the lecture like the video. That really helped me understand because it was from the farmer's point of view.

Did you think there was the right balance between that kind of information from the video and the experiential game?

Yes I thought that lecture was specifically really, really good.

Would you change anything?

I don't think I would.

I was a bit worried about how much of the video to show.

Oh no – it captured the whole life story of that guy (participant is referring to the farmer)

Is there anything else that you remember during the course that has increased your knowledge, understanding and awareness?

It linked well with the overall activities that we were doing throughout the course like it linked with the fruit kebabs as well so it was a food technology module and there was always a need to mention fair trade.

OK, what about in school? Did you mention fair trade with the children?

I had quite a difficult group so I found it quite difficult to run that and the organic thing.

Sure.

They were great because it was interesting... and I knew the other groups managed to speak about it.

So when we had the discussion the following week when the other groups told us about some of their ideas, did you find it useful to share what the others had done?

Yes, because not everybody did the same activities and tasks and it was a really good chance to bounce off each other and share ideas.

OK, and did you have enough guidance for planning etc.?

Yes

Did you feel the school visit was useful?

Yes, I think all lecturers should do that.

Section B: Environmental issues

What do you understand by the term 'organic'?

Basically, not using chemicals and pesticides that might, according to scientists, accumulate over time and because you damage your body and they prefer the natural way of growing food.

Who are 'they'?

Consumers and farmers, I guess.

Do you mean consumers of organic products and farmers who farm in an organic way?

Yes, in that way, if they weren't to use pesticides, I'm sure they will be saving a lot of money and people prefer organic foods.

Do you prefer organic foods?

Yes.

If it was the same price, would you buy organic food?

Yes, I would definitely buy organic.

What do you understand by the term 'recycling'?

I guess packaging to do with food. I can't remember too much about recycling during the course.

What about composting? Do you remember me doing any of that?

Ummm... like food?

Yes, 'left over' food. What happened to it?

I think you mentioned a compost bin. I can't remember too much about that.

I don't think I made this explicit enough but I was taking it home to my compost bin (and from the school). We don't have one in College, just paper.

What do you remember about sustainable schools?

I was confused about that, with the paper work.

It is an area we will come back to in the summer term. What could you do in school with organic foods?

In terms of teaching I will use resources, market research (what foods people prefer, watch videos showing farmers and how they go about growing organic foods).

What would you do for practical activities?

I'm not sure about design and make.

What about fruit kebabs?

One group could make it with organic and one with non-organic and do taste testing, linking with Maths and ICT.

What about composting?

Make a bin for the classroom and one for the school garden.

In the course evaluation you wrote that your level of knowledge, understanding and awareness of environmental issues has changed from 3 to 4.

Which aspects of the course do you think have influenced your learning in this area? Can you suggest other ways of developing learning in this area?

Did we do packaging, I'm not sure?

I provided organic materials as a choice.

Oh yeah.

Some people were able to discuss this in school (This participant had a very challenging group so she was not able to develop the activity as much as some of the other groups. A discussion followed about this as a valuable learning experience for her).

Appendix E

Data from participants' portfolios (Phase 2)

Table 1. Reflections on learning following activities/discussions with a focus on sustainability and eco-footprints of food products

Participant	Reflections on learning
A2	'I think about what effect certain products have on the environment' (end of course comment).
B2	'As a teacher I feel I have a role to play, to help emphasise the importance of sustainability in my classroom. I have learnt numerous ways to do so... these will encourage children to take responsibility and start thinking more about the world. After carrying out my own research and taking part in different activities, it is clear to me the importance of sustainability and eco-footprints.'
C2	'Looking at the eco-footprint of a Kinder Egg was really interesting. It certainly made me more aware about the impact of the production of a single product has on the environment.'
D2	'I have realised personally that I have a big eco footprint. I did not consider before this lecture the effects the foods I eat have on the environment. I think I will be more self- conscious about the products I buy and where they have been made.'
E2	'Before this lecture I had a good understanding of sustainability...however I did not realise the extent of the eco-footprint products have, in particular, the Kinder egg.'
F2	'I did not realise to what extent products left an eco-footprint.'
I2	The session on sustainability 'really got me thinking about the impact we have on the environment and as a future teacher the responsibility we have to teach this to children.'
J2	'I think teaching children about sustainability of the school and country to protect and learn from the environment we live in.'
K2	'One element of this lesson I had not considered before was analysing a product into its different components... and the processes they go through, the amount of transporting, waste and the number of different countries that are involved.'

Participant	Reflections on learning
L2	'It has really made me think about food products, where they come from and how they get to places around the world, and it has made me stop and think when buying products like a Kinder egg. The eco-footprint activity really shows them (<i>children</i>) the impact certain products have and how it is important to think globally when looking at sustainability as well as what they do at school, home and in their community. If children can learn about the issues now and learn the effects these things have on the world, as well as looking at ways we can reduce these effects, as they grow up and begin to make their own choices they will be more aware of the impact their actions make.'
M2	'The Kinder egg activity made me realise just how many ingredients go into one product and just how far some of these are imported. The eco-footprint created by importing these ingredients is quite worrying, but then by purchasing these we are helping to create work and putting money into less developed countries. There are both positive and negative views to this and both points need to be considered. This is very important for children to learn.'
N2	'The eco-footprint of society today put me into reality of how I can help the environment myself... by doing practical tasks it puts you in the realisation about where things produced actually come from.'
O2	'It was interesting to see just how far ingredients can come and how many different forms of transportation are needed. It again highlights the positives of supporting the British farmer.'
P2	'The Kinder egg activity has clearly portrayed to me the important message of sustainability. When participating in the activity it was interesting to discover the numerous stages within production to manufacture small products therefore becoming more aware as a teacher the actual environmental effect we, as humans, have on the environment.'
R2	(<i>The eco-footprint activity</i>) 'made me aware of how the products I choose to buy can have an impact on the world. It's something I wouldn't normally think about.'

Appendix F

Data from participants' portfolios (Phase 2)

Table 1: Reflections on learning following activities/discussions about Fair-trade

Participant	Reflections on learning
A2	'Learning about fair trade was a big eye opener for me... looking at it in more detail was fascinating. I think my decisions have changed because I have more knowledge about ... fair trade. I found it horrifying to realise what farmers are paid compared to the supermarket.'
B2	'The Fair trade game has made me become a real supporter of the organisation... a very enlightening activity. I have learnt a lot about becoming a good global citizen; this has made me reconsider the 'Fair-trade' position. I now wish to support those in the third world who struggle to gain the benefits of their work... this process has made me reconsider what I am buying... and for what reasons.'
C2	'Taking part in the chocolate game was a great experience. Not only was it fun but I thought it was a very effective way of experiencing what it is like to be in other people's shoes for a while. It made people really think about how cocoa is sold and what problems the different people involved have to face. Looking at the packaging of fair trade products was very informative and reading the stories of the people who made the product was very thought provoking.'
D2	'It has been very interesting to look at fair trade and see the difference it makes to independent farmers... I did not realise some farmers get such a bad deal... and that fair trade makes a big difference to their income... it has made me think about helping people in the farming industry by buying fair-trade products.'
E2	'I have learnt a lot about impact that buying products can have on people that made it. I realised that through the course fair trade had become more important to me.'
F2	'I have learnt a lot about the impact that buying these (<i>fair trade</i>) products can have on the people that make it.'
G2	'I learnt about what fair-trade does and how it affects the global community. I think the game helps children understand trade and how fair trade affects farmers in the developing world.'
I2	'I gained so much from it as I can now see the real importance of fair-trade for these people.'

Participant	Reflections on learning
J2	'When researching about the values of fair trade I found out lots of information I was unclear about before and it has changed my views about buying fair trade products.'
K2	<i>On the biscuit role-play</i> , 'It was only through doing this activity that I realised how consumers can influence producers.'
L2	'I found the video (<i>Fair trade DVD</i>) really informative. It actually made me consider buying more fair-trade products as I could see how these workers are supported by, and rely on, fair trading and the effects it has on their community.'
M2	'If children learn about issues such as these (<i>Fair trade</i>) from a young age then there is more chance of change. More awareness needs to be created around this and I will certainly be exploring this in my classroom.'
N2	'When enquiring into what foods fair trade support today I never realised how many foods were supported... through the organisation.'
O2	'I enjoyed doing the work and personal research on fair trade as I think it is really important that people, and children, are informed on all the factors of trade so that we, as consumers, know all the facts when we make our purchases.'
P2	'From closely studying the global compass rose concept, its purpose and undertaking my independent investigation concerning the Fair Trade banana, I now... have a greater and more informed understanding. I was amazed at the complexity of issues surrounding the production of a single fruit (banana) that I eat on a regular basis and subsequently take for granted.'
R2	'I feel that I have a greater understanding and stronger feeling towards fair trade. I now make a conscious effort to buy fair trade wherever possible.'

Appendix G

Data from participants' portfolios (Phase 2)

Table 1. Some reflections on learning about considerations made when making decisions about which foods to purchase

Participant	Reflections on learning
A2	'I feel that taking part in this course has really benefited me and made me aware of the impact of my decisions... It was really interesting to look again at my informed decisions and compare them to the ones I chose before the course as it shows a difference in what I would choose. I feel the difference is due to the fact that I am now more informed on issues relating to food such as fair trade, quality, organic and free-range.'
B2	'After making a second informed decision list, I learnt how my opinions have changed. I think this is due to learning about... issues such as Sustainability, Global citizenship and Fair trade. I now definitely rethink when I pick products up in the supermarket.'
D2	'If people took the time to make an informed decision about what they bought then the world would become a more equal place to be in.'
F2	'I now feel I can make a more informed decision when buying products.'
I2	'Key discussions can be held in the classroom... this helps children look at the consequences of informed decisions. I am aware of the fine line between informing and dictating.'
K2	'Giving children all the information will allow them to form their own opinions rather than just telling them what to do. It is about giving them a choice for their decisions and the consequences of their actions.'
L2	'Now I am more aware of these types of products (<i>Fair trade</i>) and the effects of buying them.' <i>Following the Eco-footprint activity</i> , 'Now I feel strongly about buying British produce and looking at where different foods come from.'
M2	'Shows how individuals can contribute to society.'
N2	<i>At the beginning of the course</i> , 'The task on informed decisions made me realise just how many decisions I make on a daily basis when buying and eating food. Most of the decisions I make are sub-conscious as I do not even realise I make them when selecting a food product.'
O2	'It is vital that children should be taught about how their actions affect the producers and the environment. Children are the future and for change to happen children have to be informed from an early stage.'

Participant	Reflections on learning
P2	'Thinking about the factors which affect my decision when purchasing a food product was a useful activity affecting my learning greatly. I became aware of new issues that determine the buying of goods... It enabled me to self-evaluate the choices I make as an individual. The completion of this task (<i>considering what informs decisions</i>) has improved my learning of how to make a positive impact to the world around me as through making small changes to my thought processes it will eventually benefit the food industry and society.'
R2	'Over the duration of the course, I feel the factors behind my own informed decisions have strengthened deeply. When shopping I pay more attention to where the product has come from.'